

The San Diego-Coronado Bridge

■ THE HISTORY

The San Diego-Coronado Bridge began to take shape in the cities' skyline shortly after construction started in February 1967. A little more than two years later, the distinctive towers and graceful curve of this blue box-girder designed span opened to traffic on August 3, 1969, ending an era where ferries would offer the most popular form of transportation between the two harbor cities. The bridge opening was historical from a another perspective as well, taking place on the 200th anniversary of the founding of San Diego - the oldest city on the West Coast.

The bridge was financed with a \$47.6 million bond from the California Toll Bridge Authority. It was one of eight state-owned toll bridges operated by the Division of Bay Toll Crossings, which was also responsible for its planning, design and construction.

The San Diego-Coronado Bridge was recognized as one of the true transportation wonders of its time. A year after it was opened it received the 1970 Most Beautiful Bridge Award of Merit from the American Institute of Steel Construction.

The bonds on the bridge were retired in April 1986, and subsequent toll collection was designated to help fund regional transportation improvements. The San Diego Association of Governments (SANDAG) took over administration of toll collection from the California Transportation Commission in 1992, and has conducted a lengthy environmental process that will allow it to remove the toll from the bridge in late June 2002.

During the time SANDAG maintained a toll on the bridge, state law required the regional agency to pay for the California Department of Transportation's toll collection service, bridge operations and maintenance costs -- about \$2.8 million a year or nearly half of the \$6 million in tolls collected annually.



After paying these costs, the remaining money was allocated for projects to reduce traffic congestion and improve air quality in the bridge corridor.

The only major construction to take place on the bridge over the years has been a \$70.5 million project to strengthen the bridge to current earthquake standards. This project began in January 1999 and is scheduled to be completed later this summer.

■ THE DESIGN

The San Diego-Coronado Bridge is notable among the world's great bridges for the number and size of its concrete towers. There are 30 towers that at their highest point over the bay channel reach a height of 200 feet. They were designed with a curved cap to simulate the Spanish-style mission arches associated with the historical architecture of San Diego. The towers rest on 487 pre-stressed reinforced concrete piles, which measures 54 inches in diameter, with walls 5-inches thick. The piles were driven and jetted 100 feet down into the sand and clay bottom of the bay. The mud was then removed from the inside of the piles and they were filled with concrete. Clusters of up to 44 piles were used under some

THE DESIGN cont.

of the towers. The bridge girders were painted blue to harmonize with the predominant blue color of the scenic backdrop of sky, bay and sea.

The shipping channels of the bay are spanned by a 1,880-foot, three-span box girder - the largest of its kind in the world. The bridge roadway is an orthotropic steel-plate design and serves as the top flange of the box girder. Its spans are the third longest of their kind in the nation. This design saves steel and provides a slender superstructure with a smooth exterior, with all braces and stiffeners being inside the box girder. The steel superstructure was built and partially erected in the San Francisco Bay Area. The girders were barged down the coast and lifted into place by a large crane. The precast, prestressed concrete girders measure up to 165-feet long. They were built in Long Beach and are among the longest of their kind in the nation.

The bridge road is designated as State Route 75. It features five lanes, with a movable median barrier. The barrier was installed in 1993, and provides flexible traffic congestion relief by reconfiguring the lanes so there are three westbound lanes and two eastbound lanes in the morning and three eastbound lanes and two westbound lanes in the afternoon.

The bridge also features 34-inch-high concrete railings that are low enough to permit vehicle passengers an unobstructed glimpse of the surrounding bay views. Safety designed to be wide at the bottom and narrow at the top, these railings redirect vehicle wheels back to the roadway with little or no damage.

The 12-lane Toll Plaza, with its architecturally-designed canopy on sculptured pedestals, received special landscape attention, including extensive lighting to enhance appearance.

The traffic volume on the bridge has understandably grown over the years with the increase in the region's population. This has allowed for several toll reductions. The latest toll stood at \$1 one-way per single-occupant vehicle. Carpool lanes, those with two or more occupants, are permitted to cross for free. Since most daily commuters use the free carpool lanes or buy discount toll coupons, the average toll is about 50 cents per vehicle.

The total traffic volume two years after the bridge opened was estimated at 8.6 million crossings in 1971. That figure nearly tripled by the year 2000, with about 25.6 million crossings. SANDAG figures today show that the Average Daily Traffic in both directions on the bridge with a toll is 78,400 vehicles. The ADT later this year without the toll is expected to be 89,300 vehicles. Both Caltrans and SANDAG will continue to work with the city of Coronado to help mitigate this anticipated increase in traffic across the bridge.

MYTHS AND LEGENDS

There has been several myths over the years surrounding the design and construction of the San Diego-Coronado Bridge, but perhaps the most notable myth is how some people say the middle portion of the bridge was designed to float. The story goes that if this portion of the bridge were ever to collapse into the bay, it would stay adrift, allowing large ships to easily push it aside. There is absolutely no truth to this tall tale.

